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Identification of the Acordulecera "Potato" Sawflies of Peru and Bolivia, with Descriptions of These and Related Species from South America (Hymenoptera: Pergidae)

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ABSTRACT

Sawflies damaging potato foliage in Peru and Bolivia and previously recorded as *Acordulecera* sp. belong to three new species: *A. ducra* and *A. willei* from Peru and *A. munroi* from Bolivia. These species belong to a definable group within *Acordulecera* that also includes *A. ruficeps* (Konow), *A. schrottkyi* (Konow), and the following nine new species: *A. chilensis* from Chile and Argentina; *A. colombiana* from Colombia; *A. cretoa*, *A. nexa*, *A. porteri*, and *A. vikrea* from Argentina; *A. pyqua* from Argentina and Bolivia; and *A. karpa* and *A. schuhi* from Peru. A key is given to these 14 species, and each is described and illustrated.

Acordulecera is a large genus found only in the Western Hemisphere from southeastern Canada south to Tierra del Fuego. It is an especially large and diverse genus in the Neotropical Region and, as a whole, has never been studied. From south of the United States about 45 species have been described, but this is less than half of the actual number. Because the knowledge of the genus is restricted to inadequate descriptions of species published mostly before 1908, it is understandable that the sawflies reported as damaging potato foliage in Peru and Bolivia (Wille, 1943; Munro, 1954; Carrasco, 1967; Aréstegui, 1976) have been identified only as "*Acordulecera* sp."

During my investigations of Neotropical Symphyta, I have had the opportunity to

study the types of all described species of *Acordulecera* except for five described by Enderlein from Santa Catarina, Brazil, the types of which cannot be located and may be lost. The *Acordulecera* from potato reported by the four authors mentioned above represent three new species, *A. ducra*, *A. willei*, and *A. munroi*. Furthermore, these taxa belong to a definable species group in *Acordulecera* involving 14 species distributed mainly in the Andes from Colombia south to northern Argentina, Paraguay, and in southern Argentina and southern Chile. Only two species in this group have been described, *A. ruficeps* (Konow) (1899) and *A. schrottkyi* (Konow) (1906); the other 12 are new. All 14 are described here.

The group of species of *Acordulecera*

treated here are separated from other species of the genus by the following combination of characters: (1) Head from above broadened behind eyes, with eyes small and removed from hindmargin of head (Figs. 1, 2); (2) distance between eyes below equal to or greater than eye length (Fig. 2); (3) clypeus truncate; (4) antenna (Fig. 1) 6-segmented, slender, its length subequal to or slightly shorter than head width, with only short hairs, shorter than width of the antenna; and with third and fourth segments about equal in length; (5) basal plates entire, emarginated for less than half their medial length and leaving a very small membranous area; and (6) mesoscutellum with strongly carinated margins, the margin usually produced into a thin flange and curved up (Fig. 3). Other species of *Acordulecera* commonly have large eyes that are very close to the hindmargin of the head, and the head in dorsal view narrows strongly behind the eyes; distance between eyes

below commonly shorter than eye length; clypeus emarginated in a few species; antenna 6-segmented but of various lengths and shapes, commonly much shorter than head width ($\frac{2}{3}$ or less) with third segment usually longer than fourth segment, sometimes with long hairs, longer than width of antenna, and sometimes with several unusually long stiff hairs on apical segment; basal plates emarginated at center for more than half their medial length and commonly to base, leaving a large membranous area; and the margin of the mesoscutellum with an indistinct carina or short flange, but not strongly produced.

The following key will separate the species of *Acordulecera* treated here.

Even though coloration is used in the key, genitalia should always be checked and compared with the figures to avoid misidentification due to color variation not currently known.

1. Legs mostly black, at least femora black 2
 Legs all yellowish or yellow orange or only apices of tibiae and tarsi black 6
2. Head black with a reddish-brown spot on each side of postocellar area; lancet (Fig. 14) with large spurettes; sheath (Fig. 6) with short scopae, shorter than central portion of sheath (male unknown) *schuhi*, new species
 Head mostly reddish, sometimes with small black areas around ocelli and on or above clypeus; spurettes of lancet, if present, small and slender; sheath various 3
3. Sheath without lateral scopae (Fig. 5); lancet (Fig. 16) with small, slender spurettes (male unknown) *karpa*, new species
 Sheath with distinct, laterally projecting scopae 4
4. Tibiae and tarsi whitish; genitalia as in Fig. 23, harpe broader than long; Colombia (female unknown) *colombiana*, new species
 Tibiae and tarsi brownish to black; harpe of male genitalia at least as long as broad; Peru to northern Argentina 5
5. Sheath (Fig. 7) with scopae slightly shorter than central portion; male genitalia as in Fig. 22, with valve tapering to a narrowly rounded apex; lancet (Fig. 19) without spurettes *pyqua*, new species
 Sheath with scopae much longer than central portion (as in Fig. 9); male genitalia as in Fig. 24, with apex of valve broad (female lancet not examined) *ruficeps* (Konow) (in part)
6. Sheath without scopae, uniformly thick and blunt at apex in dorsal view (Fig. 10); lancet without spurettes (Fig. 21) (male unknown) *chilensis*, new species
 Sheath with laterally projecting scopae 7
7. Thorax mostly black, posterior margin of pronotum, tegula, areas on mesonotum, and/or spot on mesepisternum may be whitish, yellowish, or orange 8
 Thorax mostly yellowish to orange, mesosternum and lower portion of mesepisternum usually pale, if blackish as in some *vikrea*, the pronotum and tegulae all yellow orange 12
8. Sheath with scopae longer than central portion (Fig. 9); apex of hindtibia and hindtarsus blackish in female; male with orange spot on mesepisternum; male genitalia as in Fig. 25; lancet similar to Fig. 26 *schrottkyi* (Konow)
 Sheath with scopae slightly shorter than central portion; mesepisternum of male black; legs usually all pale 9

9. Head mostly reddish; male genitalia as in Fig. 25 *ruficeps* (Konow) (in part)
Head mostly black, usually a reddish-brown spot on each side of postocellar area 10
10. Male genitalia as in Fig. 28, with harpe as long as broad and apex of valve broad and without concave area (female unknown) (abdomen black with central portion of basal 3 or 4 terga yellow orange; reddish-brown area on postocellar area extends to inner margin of each eye) *willei*, new species
Male genitalia as in Figs. 27, 29 with harpe curved or longer than broad and apex of valve with concave area or narrowly rounded 11
11. Lancet (Fig. 12) with large, triangular spurettes; male genitalia (Fig. 29) with harpe curved and valve narrowly rounded at apex *munroi*, new species
Lancet (Fig. 15) with small, slender spurettes; male genitalia (Fig. 27) with harpe longer than broad and valve with concave area at apex *porteri*, new species
12. Lancet without spurettes (Fig. 20); male genitalia as in Fig. 26; head and commonly entire body orange, sometimes mesonotum and/or mesopleuron and mesosternum with black areas *vikrea*, new species
Lancet with spurettes; male genitalia as in Figs. 30, 31, valve with lobe on ventroapical margin or with two long dorsal lobes; usually some black on head, and mesopleuron commonly yellow orange with upper half or upper margin contrastingly black 13
13. Lancet (Fig. 13) with large, triangular spurettes, sometimes directed upwards; valve of male genitalia (Fig. 31) with ventroapical lobe *cretoa*, new species
Lancet with small, slender spurettes; valve of male genitalia with two long dorsal lobes 14
14. Underthorax all yellow or with only upper margin black; head largely black; lancet (Fig. 18) with short spurettes; male genitalia as in Fig. 30 *ducra*, new species
Underthorax with upper third to half of mesopleuron black, lower portion orange yellow to white; head largely orange with ocellar and clypeal areas variously black; lancet (Fig. 17) with long spurettes (male unknown) *nexa*, new species

Acronyms for museums are given in the acknowledgments.

The species names *willei*, *munroi*, *schuhi*, and *porteri* are based on the collector of the types of those species; the names *chilensis* and *colombiana* are based on the country in which the type-locality is found; and the names *ducra*, *cretoa*, *nexa*, *vikrea*, *pyqua*, and *karpa* are arbitrary combinations of letters and are to be treated as nouns.

Acordulecera chilensis Smith, new species

Figs. 10, 21

Female.—Length, 3.5–4.0 mm. Antenna black to brownish. Head black, sometimes with postocellar area dark orange; clypeus, labrum, base of mandible, and palpi white; apex of mandible reddish brown. Thorax black with pronotum, tegula, mesoscutellum, and metanotum yellow orange; mesosternum and lower $\frac{1}{4}$ or less of mesepisternum reddish; mesonotum with prescutum and lateral lobes black or dark orange with center of each lobe black; anterior margin of mesoscutellum sometimes black. Abdominal terga black with central areas yellow orange, thus appearing black with longitudinal pale stripe; sterna and sheath yellow orange. Legs yellow orange, tarsi little darker. Wings hyaline, veins brown, costa and stigma yellowish. Length of antenna about $\frac{5}{6}$ head width; 3rd seg-

ment subequal in length to 4th segment. Postocellar area slightly broader than long. Hindbasitarsus subequal in length to following tarsal segments combined. Sheath (Fig. 10) truncate in lateral view, in dorsal view uniformly thick and blunt at apex, without scopae. Lancet (Fig. 21) without spurettes; each serula with very fine subbasal teeth.

Male.—Unknown.

Holotype.—Female, “Chile: Prov. Magallanes, Rio Las Minas, 10, 15 Jan. 1966, Flint and Cekalovic” (USNM Type No. 76682).

Paratypes.—CHILE: Same data as for holotype (1♀); Prov. Magallanes, Chor. Las Piedras, 11 Jan. 1966, Flint and Cekalovic (1♀); Mt. Fenton, Pta Arenas, 9 Jan. 1952 (1♀); Puerto Eden, Isla Wellington, 49°S, 3.XII.1958, G. Kuschel (1♀). ARGENTINA: Bariloche, Rio Negro, Nov. 1926, R. and E. Shannon (2♀); Correntosa, Rio Negro, Nov. 1926, R. and E. Shannon (1♀). (USNM, BM)

Remarks.—The simple sheath, lacking scopae, and simple lancet, lacking spurettes, distinguish *chilensis*. The amount of black on the mesonotum varies, but the mesoscu-

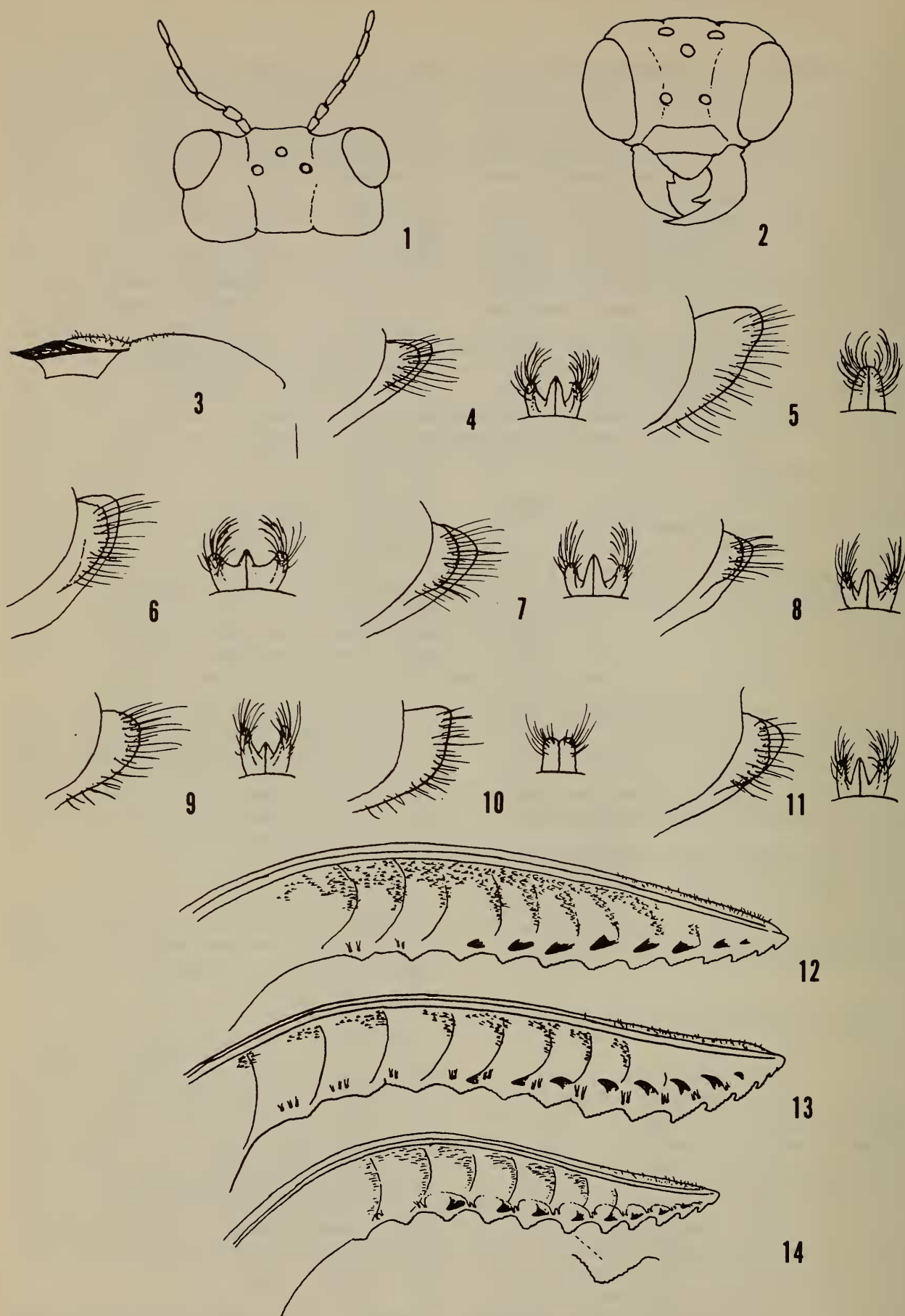
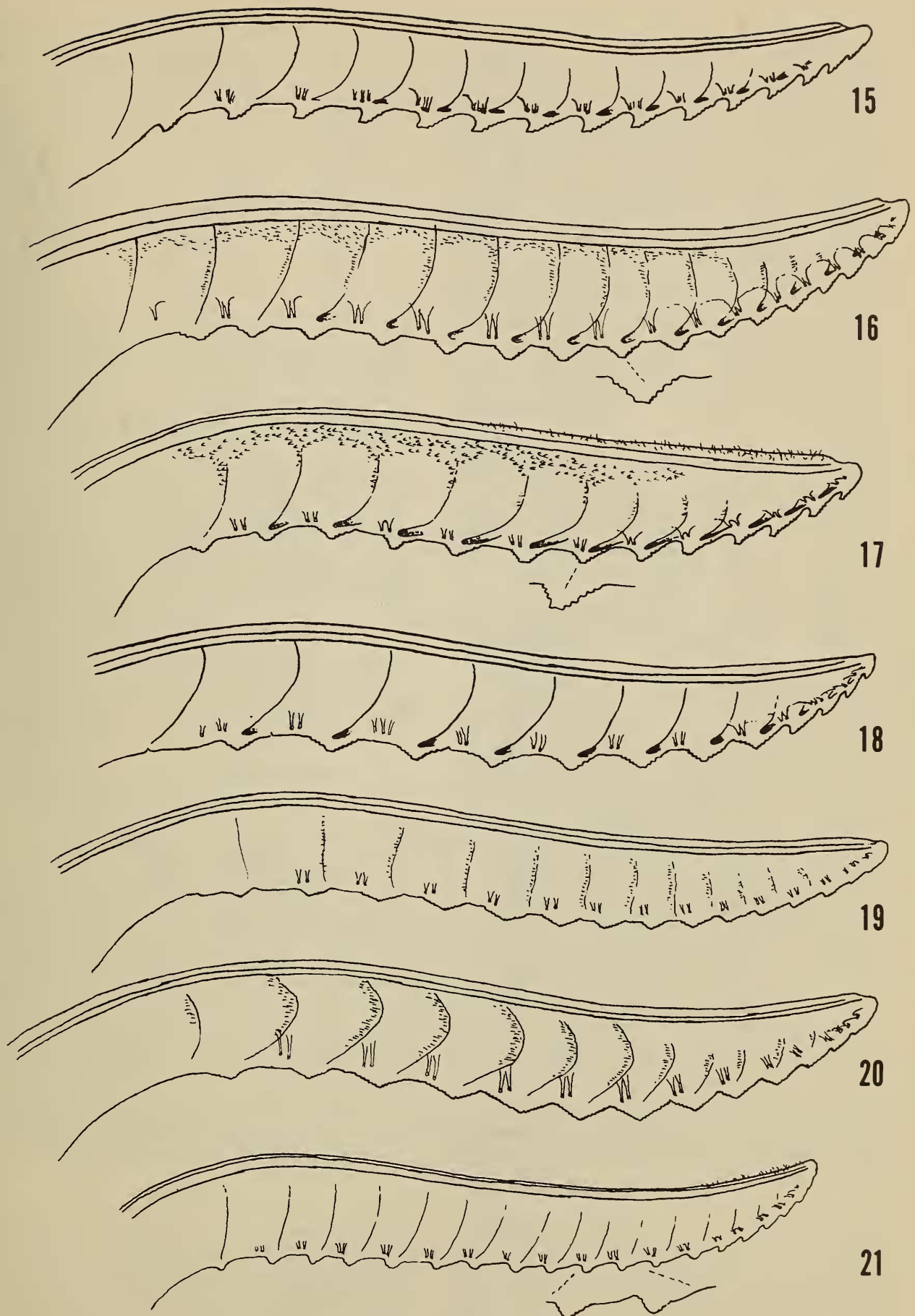
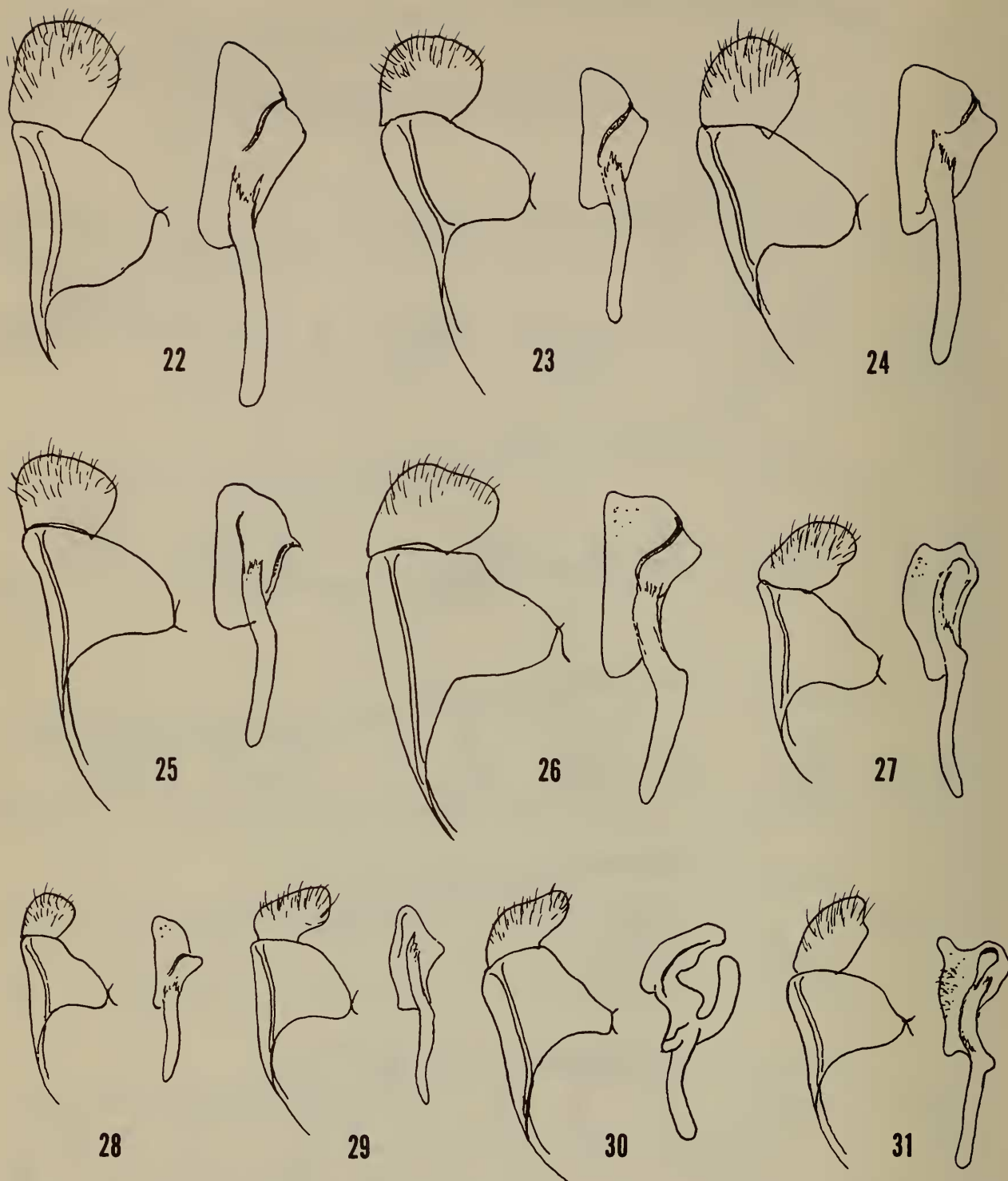


Fig. 1, head, dorsal view of *Acordulecera ducra*. Fig. 2, head, front view of *A. ducra*. Fig. 3, profile of mesonotum, scutellum at left, of *A. pyqua*. Figs. 4-11, female sheaths, lateral view at left, dorsal view at right: 4, *A. ducra*; 5, *A. karpa*; 6, *A. schuhi*; 7, *A. pyqua*; 8, *A. porteri*; 9, *A. schrottkyi*; 10, *A. chilensis*; 11, *A. munroi*. Figs. 12-14, female lancets: 12, *A. munroi*; 13, *A. cretoa*; 14, *A. schuhi*.



Figs. 15-21, female lancets: 15, *Acordulecera porteri*; 16, *A. karpa*; 17, *A. nexa*; 18, *A. ducra*; 19, *A. pyqua*; 20, *A. vikrea*; 21, *A. chilensis*.



Figs. 22-31, male genitalia, harpe and parapsis, ventral view at left; penis valve at right with ventral margin at left: 22, *Acordulecera pyqua*; 23, *A. colombiana*; 24, *A. ruficeps*; 25, *A. schrottkyi*; 26, *A. vikrea*; 27, *A. porteri*; 28, *A. willei*; 29, *A. munroi*; 30, *A. ducra*; 31, *A. cretoa*.

tellum is mostly yellow orange in all specimens examined. This is the southernmost species of *Acordulecera* and is the only species I have seen from southern Argentina and southern Chile.

Acordulecera colombiana Smith, new species

Fig. 23

Female.—Unknown.

Male.—Length, 4.0 mm. Antenna reddish, segments 1 and 2 black. Head dark reddish, ocellar area, clypeus, and labrum black; palpi and base of mandible brownish, apex of mandible dark red brown. Thorax black with posterior edge of pronotum brownish. Abdomen black, basal 2 or 3 sterna and terga 2 and 3 yellowish. Legs black with apices of femora and tibiae and tarsi whitish. Wings hyaline, veins brown, costa and stigma yellowish. Length of antenna about $\frac{5}{6}$ of head width; 3rd segment slightly longer than 4th segment. Postocellar area longer than broad. Hindbasitarsus subequal in length to remaining tarsal segments combined. Genitalia as in Fig. 23; harpe broader than long; apex of valve tapering to rounded apex at ventroapical corner.

Holotype.—Male, "Colombia: 11 mi. N. Popayana, Cauca, 1830 m, III-5-1955," "E. I. Schlinger and E. S. Ross, collectors" (CAS).

Paratypes.—COLOMBIA: Same data as for holotype (2♂) (CAS).

Remarks.—Due to the largely black coloration of the thorax, abdomen, and legs, reddish head, and structure of the genitalia, this species may be confused with *ruficeps* and *pyqua*. In *colombiana* the tibiae and tarsi are white, not brownish to black as in those species, and the genitalia differ (compare Figs. 22–24). In the genitalia of *colombiana*, the harpe is broader than long and the shape of the valve is slightly different.

Acordulecera cretoa Smith, new species

Figs. 13, 31

Female.—Length, 5.0–5.5 mm. Antenna brownish. Head yellow orange, blackish between antennae and on ocellar area; sometimes black extending laterally to eyes and sometimes black mark behind each eye extending downward on occipital margin. Thorax yellow orange with upper $\frac{1}{2}$ of mesopleuron, metapleuron, and prescutum and lateral lobes of mesonotum black,

sometimes only black mark on lobes of mesonotum. Abdomen yellow orange with terga black, usually longitudinal pale mark medially on dorsum; apical 2 or 3 sterna with black spots; sheath yellow orange. Legs yellow orange with apical 2 or 3 tarsal segments blackish. Wings very lightly uniformly infuscated black; veins dark brown, costa and stigma yellowish. Length of antenna about $\frac{5}{6}$ head width; 3rd segment subequal in length to 4th segment. Postocellar area as long as broad. Hindbasitarsus subequal in length to remaining tarsal segments combined. Sheath (as in Fig. 8) with laterally projecting scopae which are slightly shorter than central portion of sheath. Lancet (Fig. 13) with large, triangular spurettes above serrulae 4–11, sometimes directed slightly upward; serrulae at center pointed at apices, each with an equal number, 5–7, of anterior and posterior subbasal teeth, serrulae at apex longer on posterior side than on anterior side.

Male.—Length, 4.5–5.5 mm. Coloration similar to that of female except head mainly yellow orange with ocellar area and marks extending part way to antennae black; usually less black on prescutum and lateral lobes of mesonotum. Genitalia as in Fig. 31; valve with short ventroapical lobe.

Holotype.—Female, "Horco Molle, Tuc., Arg., VII.10.31.66, L. Stange leg." (TUC).

Paratypes.—ARGENTINA: Same data as for holotype, VIII-1-20 (1♀, 1♂), VIII.30.31.66 (3♀), Jan. 23–Feb. 4, 66, C. C. Porter (1♀), IX-17-30-68, C. C. Porter (1♀), Mar. 25–Apr. 30, 66, C. C. Porter (1♂), 2–15 Nov. 1967, C. C. Porter (1♀), 9.14-V-1966, L. Stange (1♀), March 7–13, 1966, L. A. Stange (2♀, 2♂), Apr. 3–10, 1966, L. A. Stange (1♂); nr. Horco Molle, I-5-66, H. and M. Townes (1♂); Tucuman, Tafi-Quebrada Cainza, 19-XII-1950, R. Golbach (1♀); 10 mi. N. Trancas, Tucuman, II-13-51, Ross and Michelbacher (1♂); Salta, Rio Pescado, V-10-69, C. C. Porter (1♀); Jujuy, 29 Feb. 1920, Cornell University Expedit. (2♂); Jujuy, Posta Lozano, III-21-23-69, C. C. Porter (1♂), same, X-29-XI-4-68 (1♀), same, III-28-31-1968 (1♂), same X-27-XI-2-68 (2♀). (TUC, USNM, CU, MCZ, HKT)

Remarks.—The lancet of *cretoa* with the large spurettes resembles those of *munroi* and *schuhi*, but those species are mostly black, at least the head and thorax. The coloration of *cretoa* resembles *nexa* in that the thorax is mostly yellow orange with the

upper half or so of the mesopleuron black, but *nexa* has rather long, slender spurettes on the lancet. The male is distinctive in that the valve (Fig. 31) has a rather long ventroapical lobe, not known in other species treated here.

The amount of black on the mesonotum varies, and the spurettes of the lancet are sometimes directed upward.

Acordulecera ducra Smith, new species

Figs. 1, 2, 4, 18, 30

Acordulecera sp.: Carrasco, 1967: 64-65, Figs. 2, 3; ? Aréstegui, 1976: 97.

Female.—Length, 5.0-5.5 mm. Antenna black, 1st segment brownish. Head black with orange spot on each side of postocellar area; clypeus, labrum, base of mandible, and palpi white; apex of mandible reddish brown. Thorax yellow with upper margins of meso- and metapleurae narrowly and mesonotum except scutellum black. Abdomen yellow orange, usually with 1st and 2nd terga black and black marks laterally on terga 3 to apex. Legs yellow orange, tarsi blackish. Wings hyaline; veins dark brown; costa and stigma yellowish. Length of antenna subequal to head width; 3rd segment slightly longer than 4th segment. Postocellar area about as long as broad. Hindbasitarsus slightly shorter than length of remaining tarsal segments combined. Sheath (Fig. 4) with lateral scopae which are shorter than central portion of sheath. Lancet (Fig. 18) with small spurettes above serrulae 2-12; each serrula with 4-5 anterior and 5-7 posterior fine subbasal teeth.

Male.—Length, 4.5-5.3 mm. Coloration similar to that of female except mesonotum sometimes black anteriorly; abdomen yellow orange with black laterally only on terga 1-3; and meso- and metapleurae with less black dorsally, sometimes black absent. Genitalia as in Fig. 30; harpe bent inward; valve with two long dorsal lobes.

Holotype.—Female, "Peru: Cusco, 1974, on potato, M. Delgado" (USNM Type No. 76684).

Paratypes.—PERU: Same data as for holotype (2♀, 1♂); Cuzco, F. Carrasco-Z. (1♀, 1♂); Pisac, Cuzco, II-3-1968, A. Garcia and C. Porter (4♀); Urubamba, Cuzco, II-7-9-1968, A. Garcia and C. Porter (5♀, 5♂); Cuzco, I-31-1968, A. Garcia and C. Porter (1♀, 1♂); Ollantaitambo, Cuzco, Feb. 28, 1947, alt. 9200 ft., J. C. Pallister, coll.

Donor Frank Johnson (1♀). (USNM, MCZ, AMNH)

Remarks.—The color of *ducra* is similar to that of *cretoa* and *nexa* in that the underthorax is yellow orange with the upper portion of the mesopleuron black, however the mesopleuron is at least half black in those two species and only the upper margin, at most, is black in *ducra*. Also, the spurettes of the lancet are smaller than those of *cretoa*. The lancet resembles those of *nexa*, *porteri*, and *karpa*, but the spurettes are longer in *nexa* and the mesopleuron is mostly black, *porteri* has the thorax mostly black, and *karpa* has a simple sheath, lacking scopae. The two lobes of the valve of the genitalia of the male are not found in other species in the group of *Acordulecera* treated here.

This is the species reported by Carrasco (1967) damaging potato foliage in the Department of Cuzco. He gave a short account of its biology and described the damage; the cocoons are illustrated. I have no specimens to verify the report by Aréstegui (1976) who recorded *Acordulecera* sp. feeding on potato foliage in the Department of Apurimac. Apurimac is adjacent to Cuzco, however, and Aréstegui's species may be *ducra*.

Acordulecera karpa Smith, new species

Figs. 5, 16

Female.—Length, 5.2 mm. Antenna dark red, segments 1 and 2 black. Head dark reddish; ocellar and most of central postocellar area, supraclypeal area, clypeus, and labrum black; palpi dark brown; mandible white at base, reddish brown at apex. Thorax black. Abdomen black, 2nd tergum and narrow posterior margins of terga 3-5 whitish. Legs black with apices of femora and inner surfaces of tibiae and tarsi pale brown. Wings hyaline; veins brown, costa and stigma more yellowish. Length of antenna slightly less than head width; 3rd segment slightly longer than 4th segment. Postocellar area longer than broad. Hindbasitarsus subequal in length to remaining tarsal segments combined. Sheath (Fig. 5) simple, without scopae; in lateral view rounded at apex; in dorsal view uniformly thick. Lancet with small spurettes above serrulae 3-16; central serrulae each with 3 or 4 anterior and 3 or 4 posterior subbasal teeth; apical serrulae

longer on posterior margin than on anterior margin (Fig. 16).

Male.—Unknown.

Holotype.—Female, "Peru: 30 mi. NE Huanucho, 2500 m, IX-17-54, E. I. Schlinger and E. S. Ross collectors" (CAS).

Remarks.—The red head and black thorax, abdomen, and legs combined with the simple sheath separate *karpa* from other *Acordulecera*. With the small spurettes on the lancet, it resembles those of *nexa*, *cretoa*, and *ducra*. Those three species, however, have large scopae on the sheath and have considerable orange yellow coloration on the legs and body.

Acordulecera munroi Smith, new species

Figs. 11, 12, 29

Acordulecera sp.: Munro, 1954: 187.

Female.—Length, 4.5 mm. Antenna black. Head black with dark orange spot on each side of postocellar area; clypeus, labrum, base of mandible, and palpi white; apex of mandible reddish brown. Thorax black; pronotum except for lower lateral angles, tegula, inner margin of each lateral lobe of mesonotum narrowly, and mesoscutellum yellow orange. Abdomen yellow orange; usually most of 1st and 2nd terga black and lateral margin of 3rd tergum to apical tergum black; sheath black. Legs yellow orange, tarsi a little darker. Wings hyaline; veins, costa, and stigma dark brown; ventral margin of stigma pale brown. Length of antenna very slightly less than head width; 3rd segment slightly longer than 4th segment. Postocellar area as long as broad. Hindbasitarsus equal to length of remaining tarsal segments combined. Sheath (Fig. 11) with lateral projecting scopae which are slightly shorter than inner portion. Lancet (Fig. 12) with large, triangular spurette above serrulae 3–10; each serrula with 3 or 4 anterior and 6 to 8 posterior fine subbasal teeth; spinelike setae on annuli and near dorsal margin.

Male.—Length, 4.0 mm. Color similar to that of female except abdomen which is yellow with lateral areas of terga black, thus a broad longitudinal, medial pale stripe evident on length of abdomen; mesoscutellum with anterior $\frac{1}{2}$ or more black; and costa, stigma, and veins of wings amber. Genitalia as in Fig. 29; harpe bent; valve narrowly rounded at apex.

Holotype.—Female, "Sucre, Boliv., Feb. 25, 1954, potato, Munro, Nava" (USNM Type No. 76683).

Paratypes.—BOLIVIA: Same data as for holotype (1♀, 2♂); highlands, reared from potato, 1965, C. Montellano (4♀). (USNM)

Remarks.—*Acordulecera munroi* is distinguished by its mostly black head and thorax with the pronotum, tegula, and mesoscutellum yellow orange, its mostly yellow orange abdomen and legs, and by the presence of large, triangular spurettes on the lancet. The lancet resembles those of *cretoa* and *schuhi*, but *schuhi* has mostly black legs, and *cretoa* has the mesosternum and lower part of the mesopleurae orange yellow and has more extensive pale coloration on the head rather than only a small dark orange spot on each side of the postocellar area as in *munroi*.

Munro (1954) first reported this species from Bolivia as "*Acordulecera* sp.": "Adults of greenish, hymenopterous larvae which cause spectacular damage to potato foliage in south central Bolivia were identified . . . as *Acordulecera* sp. . . . In February, I saw potato plants in several fields badly defoliated by this pest . . ." He stated that, according to the identifier, these were the same as Wille's material from Peru (Wille, 1943), but they are different. See the description of *willei* and compare the genitalia in Figs. 28 and 29. The female of *willei* is not known, but the male genitalia are clearly different.

Acordulecera nexa Smith, new species

Fig. 17

Female.—Length, 5.5–6.0 mm. Antenna black. Head dark orange to reddish; clypeus, labrum, base of mandible, and palpi whitish; apex of mandible reddish brown; sometimes black areas between or just above antennae. Thorax orange on dorsum, sometimes anterior margin of mesoscutellum blackish; cervical sclerites, upper $\frac{2}{3}$ of mesopleuron, metapleuron, and lateral angles of pronotum black; whitish streak on lower margin of mesepisternum between black and yellow orange mesosternum. Abdomen black with basal sterna and center of basal 5 terga orange yellow. Legs whitish, extreme apex of hindtibia and tarsi dark brown. Wings subhyaline, veins and stigma brown. Length of antenna about $\frac{5}{6}$ of head width, 3rd segment longer than 4th segment. Postocellar area as long as

broad. Hindbasitarsus equal to length of remaining tarsal segments combined. Sheath (as in Fig. 8) with lateral scopae which are slightly shorter than central portion. Lancet (Fig. 17) with rather long slender spurettes above serrulae 2–12; serrulae longer on posterior margin than on anterior margin, with 3 or 4 anterior and 5 or 6 posterior subbasal teeth.

Male.—Unknown.

Holotype.—Female, “Horco Molle, Tucuman, Argent., Mar. 25–Apr. 30, ‘66, C. C. Porter” (MCZ).

Paratypes.—ARGENTINA: same data as for holotype (1♀); Horco Molle, Tucuman, IV-24-V-9-68, C. C. Porter (1♀); Salta, 24 km O. Aguas Blancas, Cpto. Jakulica, 29-VI-1973, C. Porter and E. Demarest (1♀); Jujuy, Posta Lozano, X-27-XI-68, C. C. Porter (1♀). (MCZ, TUC)

Remarks.—The most distinctive feature of this species is the rather long, slender spurettes of the lancet, longer than those on the lancets of the related species *porteri*, *ducra*, and *karpa*. In *karpa* the female sheath is simple and the thorax, abdomen, and legs are mostly black; in *ducra* the thorax and abdomen are mostly orange yellow with the black on the thorax, if any, limited to only the upper margin; and in *porteri*, the thorax is mostly black underneath and there are more extensive black areas on the head. The coloration, especially the black upper half or more of the mesopleuron contrasting with the orange yellow coloration below it, resembles *cretoa*, but *cretoa* usually has more black on the head and has large, triangular spurettes on the lancet.

Acordulecera porteri Smith, new species

Figs. 8, 15, 27

Female.—Length, 5.0–5.5 mm. Antenna black. Head black with reddish brown U-shaped mark from posterior margin of postocellar area extending anterolaterally to inner margin of each eye, sometimes narrow line on inner margin of each eye, and stripe on gena from near top margin of eye increasing in width to malar area and touching eye only on lower outer margin; clypeus, labrum, base of mandible, and palpi white; apex of mandible reddish brown. Thorax black with posterior margin of pronotum, tegula, and posterior margin to posterior $\frac{1}{2}$ of mesoscutellum yellow

orange. Abdomen black, sometimes yellowish areas at center of basal sterna and on anterior margin of basal terga. Legs orange yellow, apical tarsal segments infuscated blackish. Wings very lightly, uniformly infuscated blackish; veins dark brown, costa and stigma pale brown with apex of costa nearly whitish. Length of antenna slightly less than head width; 3rd segment subequal in length to 4th segment. Postocellar area about as long as broad. Hindbasitarsus equal to length of remaining tarsal segments combined. Sheath (Fig. 8) with scopae which are slightly shorter than inner portion. Lancet with small spurettes above serrulae 3–13; serrulae longer on posterior margin than on anterior margin, narrowly flattened at apices, and each with 3 or 4 anterior and 6 or 7 posterior fine subbasal teeth (Fig. 15).

Male.—Length, 4.5–5.5 mm. Color similar to that of female but generally paler, antenna usually reddish brown, reddish-brown areas on head usually broader, mesoscutellum and pronotum sometimes almost entirely reddish brown; lateral deflexed portions of lateral lobes of mesonotum reddish brown, and abdomen mostly yellowish to yellow orange with apical 3 or 4 terga and sometimes apical 2 or 3 sterna black. Genitalia as in Fig. 27; harpe longer than broad; valve with apical margin concave.

Holotype.—Female, “Jujuy, Posta Lozano, Argent., X-27-XI-2-68, C. C. Porter” (MCZ).

Paratypes.—ARGENTINA: Same data as for holotype (2♀, 10♂), same except X-29-XI-4-68 (1♀, 2♂); same except 26.X.1969 (1♀); Jujuy, I-14-66, H. and M. Townes (1♂); Tucumán, Tafi del Valle, 12–14 Nov. 1967, C. Porter, A. Garcia (1♂), same, March 3–12, 66, C. C. Porter (1♂), same, I-5-66, H. and M. Townes (1♀, 1♂), same I-4-66, H. and M. Townes (1♂); Villa Nogués, XII-24-65, H. and M. Townes (4♂), same, XII-26-65 (2♂); Tucuman, km 40 ruta a Tafi del Valle, 20-X-1971, C. Porter, L. Stange (2♂); Salta, Toldos, 2400 m, 19.21.II.1960, R. Golbach (1♂); Trancas, Tacanas, II-1953, coll. J. M. Arnau (1♂). (TUC, MCZ, HKT, USNM)

Remarks.—The small spurettes on the lancet resemble those of *karpa*, *nexa*, and *ducra*, but *karpa* has a simple sheath, mostly black thorax, abdomen, and legs, and a reddish head, and *nexa* and *ducra* each have a mostly yellow orange underthorax except for the upper half or upper margin of the mesopleuron. The valve of

the male genitalia is distinctive in having the apical margin concave and lacking a rather long ventroapical lobe as is found in *ducra*. The coloration of *porteri*, especially the mostly black head and thorax, resembles that of *munroi*, but *munroi* has large, triangular spurettes on the lancet.

***Acordulecera pyqua* Smith, new species**

Figs. 3, 7, 19, 22

Female.—Length, 5.5–6.0 mm. Antenna dark reddish, 1st and 2nd segments black. Head dark reddish, sometimes posterior margin of clypeus, labrum, and palpi black; mandible pale orange at base, reddish brown at apex. Thorax black; posterior margin of pronotum and tegula yellow orange. Abdomen black, 1st and usually part of 2nd terga and 2–3 basal sterna whitish to yellow orange. Legs black with tibiae and tarsi, especially those of forelegs, paler brownish. Wings subhyaline; veins dark brown, costa and stigma pale brown. Length of antenna about $\frac{2}{3}$ of head width; 3rd segment slightly longer than 4th segment. Postocellar area longer than broad. Hindbasitarsus equal to length of remaining tarsal segments combined. Sheath (Fig. 7) with scopae which are shorter than length of central portion. Lancet (Fig. 19) without spurettes; serrulae shallow, pointed at apices, each with about 5–6 anterior and 5–6 posterior fine sub-basal teeth.

Male.—Length, 4.5–5.0 mm. Color similar to that of female except foretibia and foretarsus more whitish as are sometimes tibiae and tarsi of other legs; and basal 1–4 segments of abdomen mostly whitish to yellow. Genitalia as in Fig. 22; harpe slightly longer than broad; apex of valve narrowly rounded at apex.

Holotype.—Female, “R. A. Tucuman, Tafi-Lacavera, 28.XI.1951, coll. R. Golbach” (TUC).

Paratypes.—ARGENTINA: Same data as for holotype (3♂); Tucuman, Dpto: Burruyau, Rio Calera, 26-X-1971, col: Porter, Fidalao (15♂); Tucuman, San Javier, 10.XII.1950, coll. R. Golbach (1♂); Horco Molle, Tucuman, Mar. 25–Apr. 30, 1966, C. C. Porter (2♂, 1♀); Tucuman, Tafi-Lacavera, 16–31 Oct. 1967, C. C. Porter (1♀); Tucuman, X-19-72, G. E. Bohart (1♂); Jujuy, Alto La Viña, Mar. 13–20, 1966, C. C. Porter (1♂); Jujuy, Posta Lozano, X-29-XI-4-68, C. C. Porter (1♂); Jujuy, I-4-66, H. and M. Townes (1♂); Salta, Rio Pescado, ca. Oran, 22°53'S-64°27'0., 26-V-

1970, col. C. Porter (1♀, 3♂), same, 27-V-1970 (1♀); Villa Nogués, XII-23-65, H. and M. Townes (1♂). BOLIVIA: Yungas (1♂). (TUC, USNM, MCZ, USU, HKT, LEI)

Remarks.—This is a mostly black species with a reddish head and is closest to *ruficeps*, *karpa*, and *colombiana*. From both *karpa* and *ruficeps*, *pyqua* can be separated by the female lancet and sheath. In *karpa*, the sheath is simple and the lancet has spurettes above the serrulae; in *ruficeps*, the scopae of the sheath are much longer than the central portion of the sheath. The male genitalia of *colombiana*, *ruficeps*, and *pyqua* are very similar, but *colombiana* has the harpe broader than long, and the shape of the valve differs between *pyqua* and *ruficeps* as shown in Figs. 22, 24.

***Acordulecera ruficeps* (Konow)**

Fig. 24

Acorduleceros ruficeps Konow, 1899: 308 (♀, ♂); Konow, 1905: 32.

Acordulecera ruficeps: Smith, 1978: 179.

Female.—Length, 5.0 mm. Antenna yellow orange, segments 1 and 2 black. Head dark reddish, area around and below antennae more yellow orange as are bases of mandible and palpi; apex of mandible reddish brown. Thorax black, narrow posterior margin of pronotum brownish. Abdomen black; apical 2 or 3 segments more brownish. Legs with coxae black, apices of coxae and trochanters whitish, remaining parts of legs mostly dark brown on outer surfaces, whitish on inner surfaces. Wings with yellowish tinge to subhyaline; veins and stigma yellow orange. Length of antenna about $\frac{2}{3}$ of head width; 3rd segment slightly longer than 4th segment. Postocellar area longer than broad. Hindbasitarsis subequal in length to remaining tarsal segments combined. Sheath with posteriorly projecting scopae, rounded in lateral view, and much longer than central portion of sheath (as in Fig. 9).

Male.—Length, 4.5–5.0 mm. Similar in color to female but in general paler with posterior margin of pronotum and tegula brownish, abdomen with basal 3–4 segments whitish and apical segments black, and legs yellow orange with coxae except extreme apices, sometimes part of femora, and apical tarsal segments black. Genitalia as in Fig. 24; harpe round; apex of valve rather blunt.

Types.—The type-series of *ruficeps* is at Eberswalde; 3♂ and 1♀ labeled types were sent to me; all are labeled “Callanga,

Cuczo, Peru," the locality as stated by Konow (1899). The female is hereby designated lectotype; the 3 males, paralectotypes. The specimens have been labeled as such.

Records.—PERU: Callanga, Cuczo (lectotype and paralectotypes); 50 mi. S. Tingo Maria, Carpish Creek, XII-28-1954; E. side Carpish Mts., 2800 m, 40 mi. SW Tingo Maria, X-17-1954; Machu Picchu, XII-1-65, XI-27-65.

Remarks.—The red head and mostly black coloration of *ruficeps* resemble that of *pyqua*, *colombiana*, and *karpa*. The female is separated from those of *pyqua* and *karpa* by the sheath, which has the central portion much shorter than the scopae and not visible in lateral view; in *karpa* the sheath is simple, and in *pyqua* the sheath has the scopae shorter than the inner portion and consequently the inner portion is visible in lateral view. The male is separated from those of *pyqua* and *colombiana* by having paler legs (in some specimens the legs are mostly entirely yellow orange) and by the genitalia as compared in Figs. 22–24. The harpe of the genitalia of *ruficeps* is as long as broad and the apex of the valve is not as narrow as in *pyqua* and *colombiana*.

The female lectotype is the only female I have seen, and I did not examine the lancet before returning it.

Acordulecera schuhi, Smith, new species

Figs. 6, 14

Female.—Length, 5.0 mm. Antenna dark brown. Head black with a reddish brown spot on each side of postocellar area; apical margin of clypeus, labrum, base of mandible, and palpi white; apex of mandible reddish brown. Thorax black, narrow posterior margin of pronotum whitish. Abdomen black, very narrow margin of each segment whitish. Legs mostly black to dark brown with extreme apices of coxae, trochanters, apical $\frac{1}{4}$ and inner surface of forefemur, apical $\frac{1}{3}$ of mid- and hindfemora, and most of inner surfaces of tibiae and tarsi pale brown to whitish. Wings hyaline, veins and stigma dark brown, costa paler brown. Length of antennae slightly greater than

head width; 3rd segment subequal in length to 4th segment. Postocellar area slightly longer than broad. Hindbasitarsus subequal in length to remaining tarsal segments combined. Sheath (Fig. 6) with scopae which are shorter than inner portion. Lancet (Fig. 14) short, with large triangular spurettes above serrulae 3–10; serrulae slightly flattened at apices, each with about 7 or 8 anterior and posterior subbasal teeth except apical serrulae, which are longer on posterior margin than on anterior margin.

Male.—Unknown.

Holotype.—Female, "Peru: Amazonas: Molinopampa, 43 km E. Chachapoyas, 2300 m, July 11, 1972, R. T. and J. C. Schuh" (AMNH).

Remarks.—The coloration, especially the mostly black thorax, abdomen, and legs, are similar to *ruficeps*, *colombiana*, *pyqua*, and *karpa*; however, *schuhi* has a mostly black head, not red as in these other species. Also the lancet of *schuhi* has large triangular spurettes which are either absent or small in the other species of which the female is known. The scopae of the sheath separate *schuhi* from *ruficeps* and *karpa*; in *ruficeps* the central portion is shorter than the scopae and in *karpa* the sheath is simple.

The large spurettes of the lancet resemble those of *munroi* and *cretoa*, but those species have yellow-orange legs and usually much more extensive yellow-orange coloration on the thorax and/or abdomen.

Acordulecera schrottkyi (Konow)

Figs. 9, 25

Acorduleceros schrottkyi Konow, 1906: 345–346 (♀).

Acordulecera schrottkyi: Smith, 1978: 179.

Female.—Length, 4.3 mm. Antenna black. Head black with reddish brown spot on each side of postocellar area; apical margin of clypeus, labrum, palpi, and base of mandible white; apex of mandible reddish brown. Thorax black with pronotum except for lower lateral angles, tegula, and apical margin of mesoscutellum yellow orange. Abdomen black with apical $\frac{1}{2}$ of 2nd tergum and terga 3 and 4 yellow orange. Legs with coxae black, whitish at extreme apices, femora mostly yellow orange with black mark at bases on inner surfaces, tibiae whitish on basal $\frac{1}{4}$, blackish on apical $\frac{3}{4}$, and tarsi dark brown. Wings very lightly, uniformly

infuscated blackish to hyaline; veins and stigma dark brown, posterior margin of stigma paler brown. Length of antenna about $\frac{3}{4}$ of head width; 3rd segment longer than 4th segment. Postocellar area as long as broad. Hindbasitarsus slightly shorter than length of remaining tarsal segments combined. Sheath (Fig. 9) with scopae longer than inner portion; rounded in lateral view. Lancet (similar to Fig. 20) lacking spurettes; annuli nearly straight and perpendicular to ventral margin; annular hairs nearly as long as width of segments.

Male.—Length, 3.5 mm. Antenna brownish. Head color as for female but clypeus all white. Thorax black with pronotum, tegula, inner margins of mesoprescutum, all mesoscutellum, and a large central area on mesepisternum orange. Abdomen black with yellow orange laterally. Legs yellow orange with black spot at base of each coxa and extreme apices of tibiae and apical 1 or 2 tarsal segments black. Wings with slight yellow tinge, veins brown, costa and stigma yellowish. Genitalia as in Fig. 25; harpe broader than long; valve rounded at apex, with short spine on dorsal margin.

Type.—Konow (1906) described the female; after the description he described a male from the same locality that he thought might be the male of *schrottkyi*, but he was not certain. A male and female were sent to me from Eberswalde; both are labeled types and both are labeled "Villa Encarnac., Paraguay." Konow stated "Paraguay (Villa Encarnación)" in the original description. The female must be the holotype of *schrottkyi*; the male agrees with the description of the male by Konow, and I treat it as the male above, but I do not regard it as part of the type-series.

Records.—PARAGUAY: Villa Encarnación (type and male described above).

Remarks.—The black head, underthorax, and abdomen resemble the color of *munroi*, *willei*, and *porteri*, but the females of *munroi* and *porteri* have small or large spurettes on the lancet and each has the inner portion of the sheath slightly longer than the scopae. The male genitalia also differ as shown in the illustrations. Although the lancet of *schrottkyi* lacks spurettes as in *pyqua* and *vikrea*, the heads of those species are reddish to orange, and the sheaths of those species have the scopae shorter than the central portion.

Acordulecera vikrea Smith, new species

Figs. 20, 26

Female.—Length, 4.5–5.5 mm. Entirely yellow orange or with some or all of following brownish to black: postocellar area, anterior margin of pronotum, all or part of mesonotum, underthorax, apical 2 or 3 terga, outer surface of hindtibia, and tarsi; intermediate colorations and variations of these extremes exist. Clypeus, labrum, base of mandible, and palpi whitish; apex of mandible reddish brown. Wings with yellowish tinge to subhyaline; veins brown, costa and stigma yellowish. Length of antenna about $\frac{5}{6}$ of head width; 3rd segment slightly longer than 4th segment. Postocellar area slightly longer than broad. Hindbasitarsus subequal in length to remaining tarsal segments combined. Sheath (as in Fig. 8) with scopae slightly shorter than inner portion. Lancet (Fig. 20) without spurettes; serrulae pointed at apices, each with about 5–7 anterior and posterior fine subbasal teeth except those at apex, which are longer on posterior margin than on anterior margin.

Male.—Length, 4.5–5.0 mm. Coloration similar to and as variable as that for female. Genitalia as in Fig. 26; harpe broader than long; valve broad at apex.

Holotype.—Female, "Argentina, Tucuman, Depto. Tafi, Quebrado Cainzo, 19-XII-1950, R. Golbach" (TUC).

Paratypes.—ARGENTINA: Same data as for holotype (14♀, 6♂); Tucuman, Parque Aconquija, 22-I-1971 (1♂); Tucuman, Tafi Lacavera, 28.XI.1951, R. Golbach (1♀, 1♂); Tucuman, Alrededores Ciudad, I.1956., col. R. Golbach (1♂); Tucuman, S. M. de Tucuman, Mayo 1977, Trampa Moericke, col. P. Fidalgo (1♀); Tucuman, Dpto Burayacu, Rio Calaza, 26-X-1971, Porter-Fidalgo (1♂); Tucuman, Horco Molle, IV-9-30-1968, C. C. Porter (1♀); same, Jan. 23-Feb. 4, 66 (4♀, 5♂), same 16–31 Oct. 1967 (2♂), same, Mar. 25–Apr. 30, 66 (4♀, 10♂), same, Jan. 15–19, 1966, L. A. Stange (1♂), same, Mar. 7–13, 1966, L. A. Stange (1♀); Horco Molle, nr. Tucuman, I-18-66, H. and M. Townes (1♀); Salta, 24 km O. Aguas Blancas, Cpto. Jakulica, 29-VI-1973, C. Porter and E. Demarest (1♀, 1♂); Salta, Orán, Abra Grande, IV-18-V-5-69, C. Porter (1♀); Jujuy, Posta Lozano, X-27-XI-2-68, C. C. Porter (1♂); Jujuy, I-14-66, H. and M. Townes (1♂), same, I-15-66 (2♂), same, I-8-66 (2♂), same I-13-66 (1♀). (TUC, USNM, HKT, MCZ)

Remarks.—Most specimens are entirely yellow orange, but some in the same series have the underthorax brownish to black and have other blackish markings in various combinations as given in the description. The head is always yellow orange to orange with at most the postocellar area blackish. This species is distinguished by this coloration, by the lack of spurettes on the lancet, by the sheath which has the scopae slightly shorter than the inner portion, and by the male genitalia. Both *schrottkyi* and *pyqua* have no spurettes on the lancet, but those species are mostly black except for the reddish head in *pyqua*, and *schrottkyi* has the scopae of the sheath much longer than the central portion.

Acordulecera willei Smith, new species

Fig. 28

Acordulecera sp.: Wille, 1943: 325.

Female.—Unknown.

Male.—Length, 4.0–4.5 mm. Antennal segments 1 and 2 reddish brown (flagellum in all specimens missing). Head black with broad stripe on posterior margin of postocellar area extending on each side anterolaterally to each eye, clypeus, labrum, base of mandible, and palpi reddish brown; apex of mandible dark red brown. Thorax black with pronotum except laterally, tegula, spot on each anterolateral corner of mesoprescutum, spot on posterolateral corner of each lateral lobe of mesonotum, broad posterior margin of mesoscutellum, and metanotum yellow orange. Abdomen black with terga 1–3 and part of 4 dorsally yellow orange. Legs yellow orange with apical tarsal segments darker. Wings subhyaline, veins and stigma yellow orange. Postocellar area slightly broader than long. Apical hindtarsal segments missing in all specimens. Genitalia as in Fig. 28; harpe as long as broad; valve with apex rounded and with lobe on dorsal margin.

Holotype.—Male, “No. 19–38, Huaras [Department of Ancash, Peru], 3.II.1938,” “S. P. Vallejos and J. E. Wille coll” (USNM Type No. 76685).

Paratypes.—PERU: each labeled “No. 19–38,” though locality data probably same as holotype (3♂). One paratype with whitish, papery cocoon attached to portion of a leaf. (USNM)

Remarks.—Though only the male is known, this species is separated by the mostly black coloration of the head, thorax, and abdomen, and by the genitalia. The coloration is similar to that of males of *porteri* and *munroi*, but *porteri* has the abdomen mostly orange with only the apical terga blackish and the valve of the genitalia is concave at its apex and lacks a dorsal lobe, and *munroi* has most of the sterna of the abdomen yellow orange and the harpe of the genitalia is strongly bent.

This is the species reported by Wille (1943) as defoliating potato in the Department of Ancash. He gave a very brief description of the larva and described its damage.

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